Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Leaf Sheath Rot of Areca Nut (*Areca catechu*) Caused by *Athelia rolfsii* from Tripura, India

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Areca nut (*Areca catechu* L.) belongs to family Arecaceae and is popularly known as betel nut or Supari. India is the largest producer of areca nut in the world with annual production of 809,000 tons covering an area of 495,000 ha (FAOSTAT 2018). During a survey in July 2018, extensive leaf sheath rot of areca nut plants, yellowish-white color with profuse mycelial growth and numerous brown sclerotia, was observed. The infected areca nut leaves were collected from a farmer's field in Boromura (Tripura, India) with disease incidence ranging from 5 to 8%. White mycelial growth was observed on the upper surface of the leaf. Infected leaf samples covered with dense mycelia were collected. Symptomatic leaf samples were surface sterilized in 0.25% sodium hypochlorite solution for 1 min, washed thrice with sterilized distilled water, air dried, and placed in Petri plates containing water agar. After 3 days of incubation at room temperature (27°C), fungus emerging from leaf bits was transferred to Petri plates containing potato dextrose agar. Pure cultures were obtained with abundant, fluffy, and dense white mycelium. In culture, sclerotia were formed only after the mycelium covered the entire Petri plate. They were irregular in shape (0.5 to 1.5 mm in diameter) and scattered throughout the plate. The sclerotia were initially white but turned light orange in color as they matured. The pathogen was identified as *Athelia rolfsii* based on morphology (Aycock 1966). To confirm the identification, genomic DNA was extracted from mycelial mat of *A. rolfsii* using a Zymo Research

fungus/bacterial DNA miniprep kit (Irvine, CA), and the internal transcribed spacer (ITS) region of rDNA was amplified using universal primers ITS1 and ITS4 (White et al. 1990). A 650-bp PCR product was sequenced. The sequence (GenBank accession no. MN650825) showed 98% identity with NCBI accessions MN380242 and two ATCC and CBS voucher strains (AF499018 and MH854711, respectively). After the characterization and purification of the pathogen, an experiment was conducted to confirm pathogenicity. Six earthen pots (29-cm diameter) were filled with sterilized soil and kept in a greenhouse. Three-month-old areca nut plants were inoculated with 11-day-old mycelial mat prepared in potato dextrose broth. The leaf sheath of each areca nut plant was artificially injured and wrapped with moistened sterilized cotton containing mycelial mat of *A. rolfsii*. Three areca nut plants were injured, inoculated with sterile distilled water, and maintained as experimental controls. Earthen pots were individually covered with plastic bags and kept in the greenhouse for 20 days. The leaf sheath rot symptoms observed on the inoculated plants were similar to those seen in the field. The fungus was reisolated from the inoculated plants and identified based on morphology. No symptoms were observed on control plants, and no fungus could be isolated. This culture was deposited in the Indian Type Culture Collection, Division of Plant Pathology, ICAR - Indian Agricultural Research Institute, New Delhi, India (ITCC 8432). To the best of our knowledge, this is the first report of leaf sheath rot of areca nut caused by *A. rolfsii* in India and also in the world. Because the areca nut plant has high economic and medicinal value, this disease report is of great significance.

References:

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